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**Hotelling et al.**

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(54) **SIMULTANEOUS SENSING ARRANGEMENT**

(56) **References Cited**

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**ABSTRACT**

Multi-touch touch-sensing devices and methods are described herein. The touch sensing devices can include multiple sense points, each located at a crossing of a drive line and a sense line. In some embodiments, multiple drive lines may be simultaneously or nearly simultaneously stimulated with drive signals having unique characteristics, such as phase or frequency. A sense signal can occur on each sense line that can be related to the drive signals by an amount of touch present at sense points corresponding to the stimulated drive lines and the sense line. By using processing techniques based on the unique drive signals, an amount of touch corresponding to each sense point can be extracted from the sense signal. The touch sensing methods and devices can be incorporated into interfaces for a variety of electronic devices such as a desktop, tablet, notebook, and handheld computers, personal digital assistants, media players, and mobile telephones.

**Related U.S. Application Data**

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(52) **U.S. Cl.**

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